

# *Nola ronkayorum* sp. n., a new species from Bulgaria and Turkey (Lepidoptera: Nolidae)

Stoyan Beshkov

**Abstract.** *Nola ronkayorum* sp. n. is described from Bulgaria (Southern Black Sea Coast and Eastern Rhodopi Mts.) and Turkey (Taurus Mts. and Eastern Pontic Mts.). The new species forms small colonies and is on the wing for a short period in April–May. *N. ronkayorum* differs in appearance from the other known *Nola* species. In genital characteristics it shows clear differences from the closely related *Nola confusalis*, especially the sclerotization on the ductus bursae of the female and in the sclerotization of the eighth abdominal segment in the male, as well as by other small differences in male and female genitalia.

**Samenvatting.** *Nola ronkayorum* sp. n., een nieuwe soort uit Bulgarije en Turkije (Lepidoptera: Nolidae)

*Nola ronkayorum* sp. n. wordt beschreven uit Bulgarije (zuidelijke Zwarte-Zeekust en Rhodopen) en uit Turkije (Taurus gebergte en Oost-Pontisch gebergte). De nieuwe soort vormt kleine kolonies en heeft een korte vliegtijd in april–mei. *N. ronkayorum* verschilt in uiterlijke kenmerken van alle andere *Nola*-soorten. De genitaalkenmerken duiden op een nauwe verwantschap met *Nola confusalis*, vooral de sclerotisering van de ductus bursae in het vrouwtje en die van het 8<sup>ste</sup> abdominaal segment in het mannetje, al zijn er nog tal van andere kleine verschillen in de mannelijke en vrouwelijke genitalia.

**Résumé.** *Nola ronkayorum* sp. n., une espèce nouvelle de Bulgarie et de Turquie (Lepidoptera: Nolidae)

*Nola ronkayorum* sp. n. est décrite de Bulgarie (côte méridionale de la Mer Noire et Mts. Rhodope) et de Turquie (Mts. Taurus et Mts. Pontiques orientaux). Cette espèce nouvelle espèce vole en petites colonies pendant une courte période en avril–mai. *N. ronkayorum* diffère de toutes les autres espèces de *Nola* par des caractères extérieurs. Les caractères des genitalia montrent que la nouvelle espèce est apparentée au *Nola confusalis*, spécialement par la sclérisation du ductus bursae de la femelle et la sclérisation du 8<sup>ème</sup> segment abdominal du mâle, ainsi que par d'autres différences minimales dans les genitalia mâles et femelles.

**Key words:** *Nola ronkayorum* sp. n. – Noctuidae – Nolinae – Bulgaria – Turkey – description – genitalia – illustrations.

Beshkov, S.: National Museum of Natural History, Tsar Osvoboditel Blvd № 1, 1000 Sofia, Bulgaria. Email: beshkov@nmnh.bas.bg.

Specimens of the *Nola confusalis* (Herrich-Schäffer, [1847]) species group from the Eastern Rhodopi Mts. (several localities) and from the Black Sea Coast of southern Bulgaria differ significantly from those from other parts of Bulgaria and Europe (personal observations) and the British Isles. Specimens collected in Turkey (Prov. Antalya, Taurus Mts., Cevizli village near Akseki and in Karadeniz Dağları, Çoruh Valley, about 20 km E. of İspir) are similarly different from typical *N. confusalis*. There is no doubt that they belong to an undescribed taxon (Beshkov & Langourov 2004), which inhabits part of Eastern Bulgaria, Asia Minor and the Eastern Pontic Mountains. This opinion was expressed by Beshkov (2000: 198) and was shared by Dr. L. Ronkay and Mr. G. Ronkay (pers. comm. February 2004, Budapest). Males of the species described here have already been illustrated in colour in Beshkov (2000: 285, plate II, fig. 11 as *Nola confusalis* ssp.) and monochrome, together with *Nola confusalis* (p. 271, pl. 11, fig. 13: *Nola confusalis* ssp.; figs. 14–16: *Nola confusalis confusalis*) and

in Beshkov & Langourov (2004: 665, fig. 30, ♂) as an undescribed taxon in the *Nola confusalis* (Herrich-Schäffer, [1847]) species group.

This previously unnamed species is closely related to *N. confusalis*, but differs from it in habitus and genitalia, especially in the female. It also differs in appearance from all other *Nola* species from Palaearctic region. It is easy to distinguish this taxon among other representatives of the genus at a glance. The correlation of the genitalic features with the habitus, as well as the biotope and isolated localities give sufficient reasons to describe this taxon here as a new species.

### ***Nola ronkayorum* Beshkov, sp. n.**

(plate 1, figs. 3–4, 7–8; plate 2, figs. 9, 11, 12, 14, 15, 17, 18, 21)

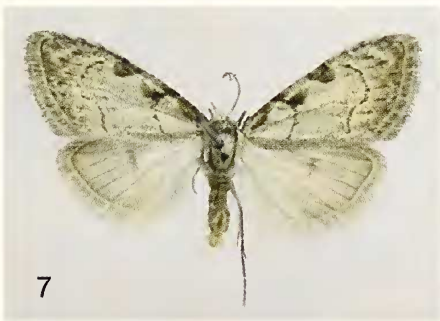
Male: (plate 1, figs. 7–8; plate 2, figs. 9, 12, 15, 18, 21): Wingspan 16–20 mm, average 18 mm. *Nola confusalis* from the British Isles measure 16–24 mm (Skinner 1984: 84), those from Northern Europe are 19–21 mm (Skou 1991: 65). According to de Freina & Witt (1987) the wingspan of males is 15–22 mm. In general *Nola ronkayorum* looks more graceful than *N. confusalis*. The forewings are longer and narrower and pointed at the apex, with a reduced, but more contrasting pattern and a darker costal margin. The tufts of raised scales are larger than in *N. confusalis*, darker, blackish or rusty. The antemedian and postmedian fasciae form clearly visible uninterrupted blackish lines across the wings; in *N. confusalis* (plate 1, figs. 5–6; plate 2, figs. 10, 13, 16, 19, 22) these fasciae are composed of small black dots on the veins. Ground colour of forewings silvery-whitish to greyish with dark and rusty scales. Veins distinct medially and terminally, only vein M is entirely dark in all its length.

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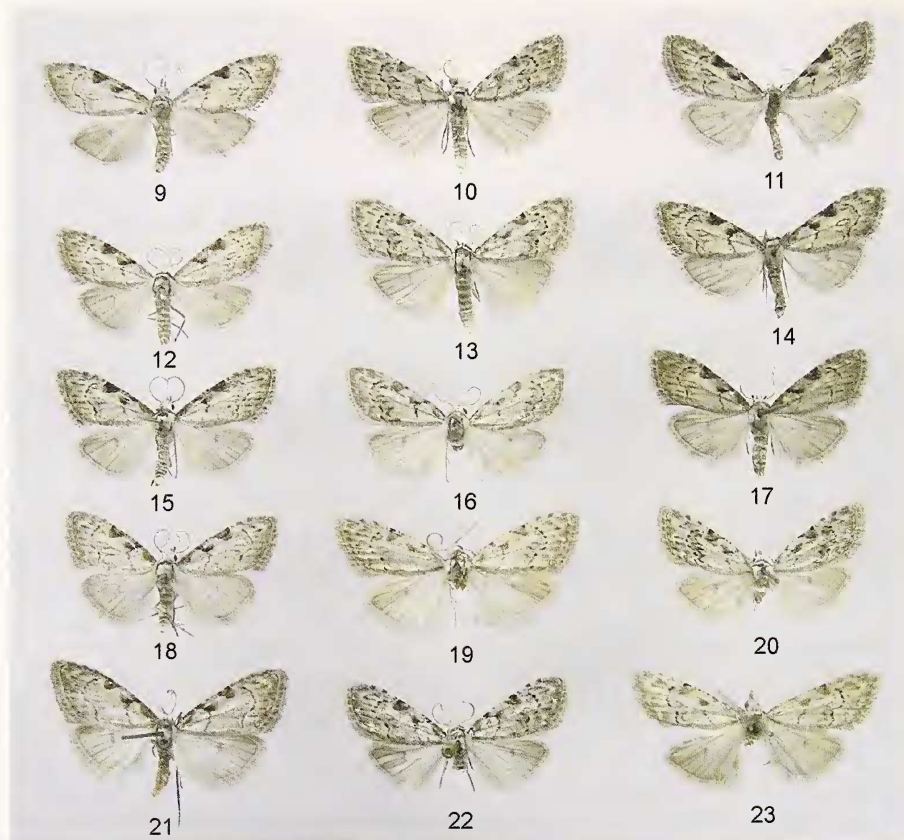
#### Legend of plate 1:

- 1.— *Nola confusalis* H. S., ♀. BG, Lozenska Planina Mts, above German Village, Sofia district, 1000 m, 24.V.1997, in coll. SB, NMNHS.
- 2.— *Nola confusalis* H. S., ♀. France, Eure, Bouquelson, 02.V.1975, C. Sircoulomb leg., ex coll. M. Fibiger, in coll. SB: NMNHS.
- 3.— *Nola ronkayorum* sp. n. Holotype, ♀. BG, E. Rhodopi Mts, ~2 km from the bridge on Arda River between Madzharovo and Borislavtzi, 160m, 02.V.2003, in coll. NMNHS.
- 4.— *Nola ronkayorum* sp. n. paratype, ♀. BG, E. Rhodopi Mts, Arda Valley, above the bridge on Arda River near Madzharovo, 220m, 03.V.2003, in coll. SB: NMNHS.
- 5.— *Nola confusalis* H. S., ♂. BG, S Black Sea Coast, Ropotamo Park, “Velyov Vir” reserve, in coll. SB: NMNHS.
- 6.— *Nola confusalis* H. S., ♂. Denmark, Kristiansode, Scov, LFM, 26.V.1989, M. Fibiger leg., in coll. SB: NMNHS.
- 7.— *Nola ronkayorum* sp. n. paratype, ♂. Turkey, Prov. Antalya, Taurus Mts, ~3 km to Cevizli from Akseki, 1200m, 12.V.1999, in coll. SB: NMNHS.
- 8.— *Nola ronkayorum* sp. n. paratype, ♂. BG, E. Rhodopi Mts, Odrintzi Village, 150m, 30.IV.1997, in coll. SB: NMNHS.

# Plate 1



## Plate 2



Legend of plate 2:

*Nola ronkayorum* sp. n. (9, 11, 12, 14, 15, 17, 18, 21):

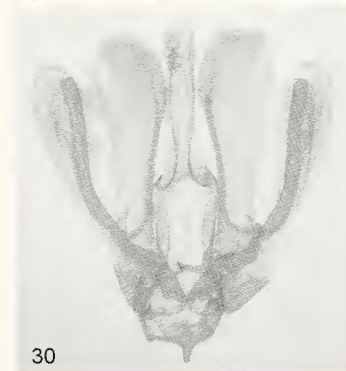
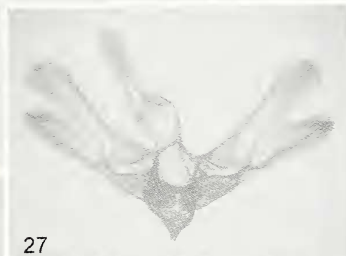
9, 12, 15, 18.— paratypes ♂. BG, E. Rhodopi Mts, Odrintzi Village, 150m, 30.IV.1997; 9, 15 in coll. SB: NMNHS; 12 in coll. B. Goater (Hants, UK); 15 in coll. K. Soichiro (Osaka, Japan); 18 in coll. C. Plant (Hertfordshire, England). 11.— paratype ♀. Turkey, Karadeniz Dağları, Çoruh Valley, ~ 20 km E. of İspir, 1060 m, 22.IV.2001, in coll. SB: NMNHS. 14.— Holotype ♀. BG, E. Rhodopi Mts, ~2 km from the bridge on Arda River between Madzharovo and Borislavtzi, 160 m, 02.V.2003, in coll. NMNHS. 17.— paratype ♀. BG, E. Rhodopi Mts, Arda Valley, above the bridge on Arda River near Madzharovo, 220 m, 03.V.2003, in coll. SB: NMNHS. 21.— paratype, ♂. Turkey, Prov. Antalya, Taurus Mts.~ 3 km to Cevizli from Akseki, 1200m, 12.V.1999, in coll. SB: NMNHS.

*Nola confusalis* (Herrich-Schäffer, [1847]) (10, 13, 16, 19, 20, 22, 23)

10, 13.— ♂. BG, S Black Sea Coast, Ropotamo Park, "Velyov Vir" reserve, in coll. SB: NMNHS. 16.— ♂. Denmark, Kristiansode, Scov, LFM, 26.V.1989, M. Fibiger leg., in coll. SB: NMNHS. 19.— ♂. "Collectio Princ. Bulg. Austria.", in coll. P. Bachmetjew in NMNHS. 20.— ♀. France, Eure, Bouquelon, 02.V.1975, C. Sircoulomb leg., ex coll. M. Fibiger, in coll. SB: NMNHS. 22.— ♂. BG, S Black Sea Coast, Ropotamo Park, "Velyov Vir" reserve, S. Beshkov, in coll. SB: NMNHS. 23.— ♀. "Ex collectio Carl Frosch", in coll. NMNHS.



### Plate 3



Costal margin in basal region rusty, basal patch and subbasal fascia present as small more or less visible blackish spots. In the basal portion below the costal margin there is triangular tuft of rusty and blackish raised scales. Antemedian fascia arises from a double black patch on the costal margin and continues as a single black line angled at 90° near to the medial vein. Between this angle and the costal margin there is second tuft of rusty and blackish raised scales. In medial part of the forewing the costal margin is dark with two small black dots above the second tuft of raised scales and there is a large blackish patch touching the postmedian fascia. This patch is continuous with a third, large, triangular tuft of rusty and blackish raised scales. Postmedian fascia an irregularly sigmoid, uninterrupted blackish line, preceded proximally by a less distinct, thin, angled line which together with the dark veins forms a pattern resembling a chain of semicircles in the median area of the wing. Terminal part of the wings with dark rusty subterminal fascia, subapically with whitish spot, veins blackish. Terminal fascia of same coloration as the subterminal one and the area between them and between subterminal and postmedian fasciae is pale. Fringes white basally and terminally, dark in their middle, but on the end of the veins they are pale. Underside forewings as in *N. confusalis*, unicolourous, costal area darker proximally.

Hindwings similar in colour to the forewings but paler, bright, and without rusty scales. Discal spot present, the area between this spot and the margin finely dusted with dark scales and veins darker, clearly visible. Basal part of the wings hyaline, dark scales more or less reduced, veins less contrasting. Fringes white with a broad, dark median band which extends to the margin as it approaches the costa. In *N. confusalis* the upperside of the hindwings is similar, but the costal area to Cu1 is darker, the rest of the wing bright, whitish. Underside hindwings as in *N. confusalis*, discal spot more distinct than that on the upperside. The area between costal margin and vein Cu1 with dark scales, the rest of the wing lighter, dark scales more or less lacking, fringes as in upperside.

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Legend of plate 3 (male genitalia):

- 24.– *Nola ronkayorum* sp. n. paratype, ♂. Turkey, Prov. Antalya, Taurus Mts, ~ 3 km to Cevizli from Akseki, 1200m, 12.V.1999, gen. prep. 8./07.III.2005, S. Beshkov, in coll. SB: NMNHS.
- 25, 26.– *Nola ronkayorum* sp. n. paratype, ♂. BG, E Rhodopi Mts, Arda Valley, above the bridge on Arda River near Madzharovo, 220m, 01.V.2003, in coll. SB: NMNHS. 25.– gen. prep. 8./27.I.2004, S. Beshkov; 26.– gen. prep. 7./27.I.2004, S. Beshkov.
- 27.– *Nola ronkayorum* sp. n. paratypes, ♂. BG, E. Rhodopi Mts, Odrintzi Village, 150m, 30.IV.1997, gen. prep. 1./07.III.2005, S. Beshkov, in coll. SB: NMNHS.
- 28, 29.– *Nola confusalis* H. S., ♂. BG, S Black Sea Coast, Ropotamo Park, "Velyov Vir" reserve, in coll. SB: NMNHS. 28.– Gen. prep. 1./02.III.2005, S. Beshkov; 29.– Gen. prep. 2./02.III.2005, S. Beshkov.
- 30.– *Nola confusalis* H. S., ♂. Denmark, Kristiansode, Scov, LFM, 26.V.1989, M. Fibiger leg., Gen. prep. 2./27.I.2004, S. Beshkov, in coll. SB: NMNHS.
- 31.– *Nola confusalis* H. S., ♂. "Ex collectio Carl Frosch", Gen. prep. 4./27.I.2004, S. Beshkov, in coll. NMNHS.

Head, patagia, tegulae and metathorax as in *N. confusalis*, silvery-whitish with dark rusty and blackish scales forming dark bands, abdomen bright, unicolourous. First abdominal segment dorsally with tufts of raised scales. Antennae as in *N. confusalis*, ciliate with bundle of hair on the very thin pectination. Palpi dark rusty.

Female: (plate 1, figs. 3–4; plate 2, figs. 11, 14, 17): Wingspan 15–20 mm. Average 18 mm. Holotype (plate 1, fig. 3, plate 2, fig. 14) – 20 mm. Of female *N. confusalis* (plate 1, figs. 1–2, plate 2, figs. 20, 23) according to de Freina & Witt (1987) the wingspan is 18–24 mm. Like males, a little bit darker, the pattern is more distinct. Hindwings darker, less hyaline as in the males. Antennae filiform.

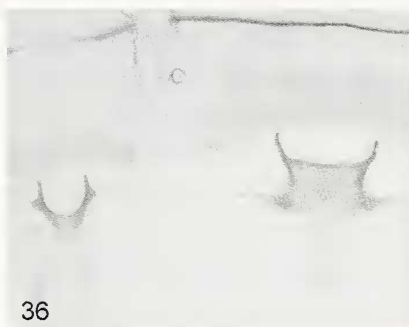
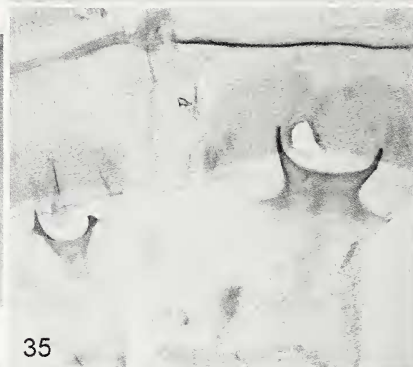
Male genitalia (plate 3, figs. 24–27): Genital armature very similar to those of *N. confusalis* (plate 3, figs. 28–31), but slightly smaller. The length of the genitalia from the distal point of saccus to the distal point of the uncus is 1.9–2.0 mm (average 1.96 mm) in *Nola ronkayorum* sp. n. In *N. confusalis* it is 2.1–2.3 mm (average 2.22 mm). Valvae bifurcate, 1.6 mm long in *N. ronkayorum* and 1.9–2.0 mm (average 1.95 mm) in *N. confusalis*. Clasper sabre-shaped as in *N. confusalis*. Tegumen and uncus of *N. ronkayorum* are much longer than those of *N. confusalis*, together extending beyond the tip of the valvae. In *N. confusalis* these structures reach the tips of the valvae or are only slightly longer. In *N. ronkayorum* the saccus is V-shaped with the outer margins arched slightly inwards, forming only a small point at the apex. In *N. confusalis* the saccus is U-shaped with a triangular or thumb-like tip on the apex.

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Legend of plate 4 (aedeagus and 8th abdominal segment):

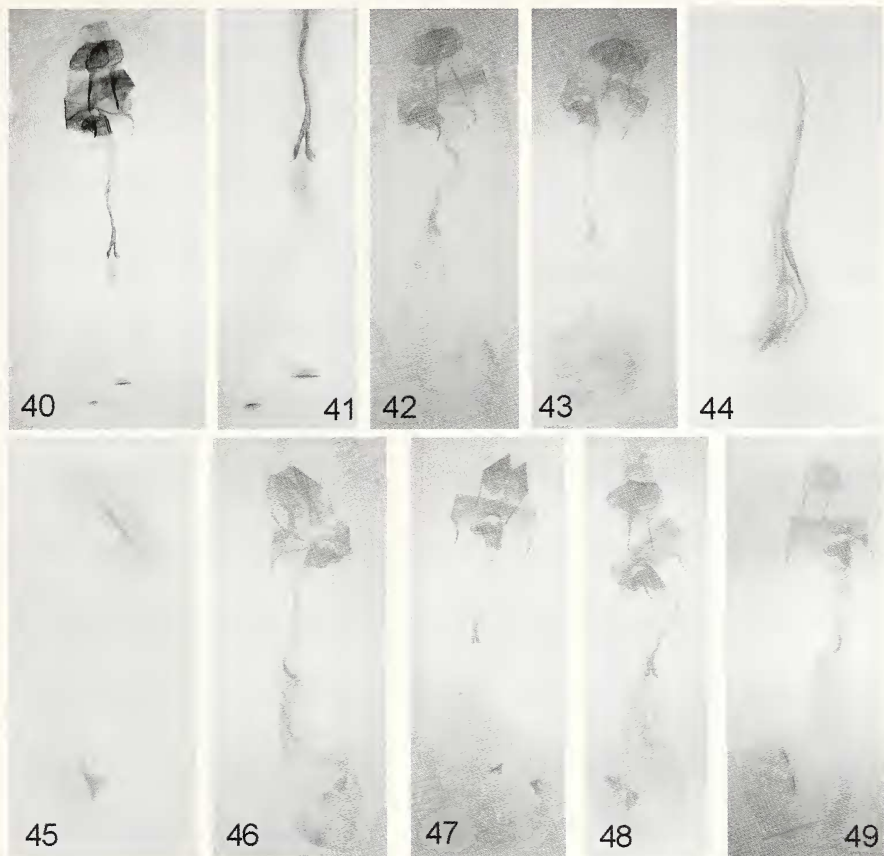
- 32.– *Nola ronkayorum* sp. n. paratype, ♂, aedeagus. BG, E Rhodopi Mts, Arda Valley, above the bridge on Arda River near Madzharovo, 220 m, 02.V.2003, Gen. prep. 3./02.III.2005, S. Beshkov in coll. SB: NMNHS.
- 33.– *Nola confusalis* H. S., ♂, aedeagus. "Ex collectio Carl Frosch", Gen. prep. 4./27.I.2004, S. Beshkov, in coll. NMNHS.
- 34.– *Nola ronkayorum* sp. n. paratype, ♂, 8th segment. Left – tergite, right – sternite. Turkey, Prov. Antalya, Taurus Mts, ~ 3 km to Cevizli from Akseki, 1200 m, 12.V.1999, gen. prep. 8./07.III.2005, S. Beshkov, in coll. SB: NMNHS.
- 35.– *Nola ronkayorum* sp. n. paratype, ♂, 8th segment. Left – sternite, right – tergite. BG, E Rhodopi Mts, Byala Reka River valley, the bridge near Meden Bouk Village, 200 m, 29-30.IV.1997, Gen. prep. 2./07.III.2005, S. Beshkov, in coll. SB: NMNHS.
- 36, 37.– *Nola ronkayorum* sp. n. paratype, ♂, 8th segment. Left – sternite, right – tergite. BG, E. Rhodopi Mts, Odrintzi Village, 150 m, 30.IV.1997, in coll. SB: NMNHS. 36.– Gen. prep. 3./07.III.2005, S. Beshkov; 37.– Gen. prep. 1./07.III.2005, S. Beshkov.
- 38, 39.– *Nola confusalis* H. S., ♂. BG, S Black Sea Coast, Ropotamo Park, "Velyov Vir" reserve, in coll. SB: NMNHS. 38.– 8th segment. Left – sternite, right – tergite, Gen. prep. 4./07.III.2005, S. Beshkov; 39.– 8th segment, ventral view, Gen. prep. 1./02.III.2005, S. Beshkov.

# Plate 4





## Plate 5



Legend of plate 5 (female genitalia):

### *Nola ronkayorum* sp. n. (40–46)

**40, 41.**– Holotype ♀. BG, E Rhodopi Mts, ~ 2 km from the bridge on Arda River between Madzharovo and Borislavtzi, 160 m, 02.V.2003, Gen. prep. 6./07.III.2005, S. Beshkov, in coll. NMNHS. **42.**– paratype ♀. BG, E Rhodopi Mts, Arda Valley, above the bridge on Arda River near Madzharovo, 220 m, 02.V.2003, Gen. prep. 14./27.I.2004, S. Beshkov in coll. SB: NMNHS. **43, 44, 45.**– paratypes ♀. BG, E Rhodopi Mts, ~ 2 km from the bridge on Arda River between Madzharovo and Borislavtzi, 160 m, 02.V.2003, in coll. SB: NMNHS. **43.**– Gen. prep. 15./27.I.2004, S. Beshkov; **44, 45.**– Gen. prep. 5./07.III.2005, S. Beshkov. **44.**– sclerotization of the ductus bursae; **45.**– signa. **46.**– paratype ♀. Turkey, Karadeniz Dağları, Çoruh Valley, ~ 20 km E. of İspir, 1060 m, 22.IV.2001, Gen. prep. 7./07.III.2005, S. Beshkov in coll. SB: NMNHS.

### *Nola confusalis* (Herrich-Schäffer, [1847]) (47–49)

**47.**– ♀. BG, Lozenska Planina Mts, above German Village, Sofia district, 1000 m, 24.V.1997, Gen. prep. 17./27.I.2004, S. Beshkov, in coll. SB, NMNHS. **48.**– ♀. "Ex collectio Carl Frosch", Gen. prep. 5./27.I.2004, S. Beshkov, in coll. NMNHS. **49.**– ♀. France, Eure, Bouquelon, 02.V.1975, C. Sircoulomb leg., ex coll. M. Fibiger, Gen. prep. 6./27.I.2004, S. Beshkov, in coll. SB: NMNHS.

Aedeagus (plate 3, figs. 25–26; plate 4, fig. 32) similar to that of *N. confusalis* (plate 4, fig. 33), very short (about 0.8 mm long), trapezoidal with a long hook-like cornutus inside. This cornutus is as long as the diameter of the aedeagus.

The sclerotised plate on the eight abdominal segment of the male also provides easy characters for separation of the two species. On sternite 8 (plate 4: fig. 34 right, figs. 35–37 left) the plate is approximately 0.3 mm wide, shallowly excavated in the shape of a letter “C” in *N. ronkayorum*, and the projections that arise from each corner are short with a suggestion of a bifurcation. In *N. confusalis* (plate 4: fig. 38 left, fig. 39) the plate is 0.3–0.4 mm wide, deeply excavated in the form of a “U” and the processes at the corners are long, with no subsequent forking. The eighth tergite also bears a plate. In the new species (plate 4: fig. 34 left, fig. 35–37 right), the basal area is 0.4 mm wide from which the two projections arise is clearly wider than long; in *N. confusalis* (plate 4: fig. 38 right, fig. 39) the basal area is more or less square (0.5 mm) and the concave sides cause the overall plate to resemble a drinking goblet.

Female genitalia (plate 5, figs. 40–46): Similar to those of *N. confusalis* (plate 5, figs. 47–49) but easily distinguished by the sclerotization of the ductus bursae. In *Nola ronkayorum* the sclerotized plate is 0.55–0.9 mm long (average 0.76 mm, 0.9 mm in holotype (plate 5, figs. 40–41)), but the genitalia in general are smaller – 4.2–5.0 mm (average 4.4 mm, 5.0 mm in holotype). In *N. confusalis* the sclerotized plate is almost twice as small – 0.4–0.5 mm long (average 0.43 mm) (plate 5, figs. 47–49), but the genitalia in general are larger – 5.0–5.5 mm (average 5.2 mm). In *N. ronkayorum* the sclerotized plate is excavated at its base (plate 5, figs. 41, 44), and this excavation is much deeper than in *N. confusalis* (plate 5, figs. 47–49). Respectively the relation of the length of the sclerotized plate – length of genitalia is 1: 5.25–1: 7.9 in *N. ronkayorum* (1: 5.6 in holotype) and 1: 11–1: 12.5 in *N. confusalis*. Ductus bursae in both species with a membranous oval knob, situated just after the ribbed antrum. The different size of the genitalia makes the apophysis in *N. ronkayorum* look shorter than in *N. confusalis*, but in fact in both species they are of the same length. Another good difference is in the sclerotization of the corpus bursae - in *N. confusalis* both signa are large, trianguliform, of almost equal length (plate 5, figs. 47–49). In *N. ronkayorum* they are less sclerotized. The upper one is nearly as large as in *N. confusalis* but more lanceolate; the second is two or more times smaller than the upper one (plate 5, fig. 6) and those in *N. confusalis*. In this feature and in sclerotization of ductus bursae *N. ronkayorum* more closely resembles *Nola semiconfusa* Inoue, 1976, as illustrated in Inoue (1982: pl. 352, fig. 6.) than *N. confusalis*. In the specimen from Turkey, the sclerotized plate of the ductus bursae is smaller, the second signum is distinctly smaller than the upper one, strongly sclerotized with triangular apex (plate 5, fig. 46).

*Nola confusalis* was described in the genus *Roeselia* and its type locality is unknown (Poole 1989: 693). The only illustrations of the genitalia the present author has found are of the female, in Rákósy (1996: 261) and of both sexes in Inoue (1982: pl. 349, 352). According to G. Ronkay (pers. comm. II.2004) those in Inoue represent another species. The illustration in Rákósy is inadequate for taxonomic work. For this reason the comparison of both genitalia and habitus between both species presented here is based on material of *Nola confusalis* from four countries. A total of 7♂ and 3♀ genitalia slides were prepared and examined by the present author.

The subspecies of *Nola confusalis* differ much from *Nola ronkayorum* sp. n. In *N. confusalis signata* Lempke, 1960 (TL: Netherlands, Apeldoorn; incl. the dark grey ab. *columbina* (Lempke 1960) the ground colour is whitish, contrasting with the very dark postmedian fascia. This subspecies is illustrated in colour in de Freina & Witt (1987: pl. 1, fig. 20). The paratype of *Nola confusalis fumosensis* (Daniel, 1957) (TL: [Austria], Teriolis meridionalis, Überetsch, Altenberger Wald) is also illustrated in de Freina & Witt (1987: pl. 1, fig. 19). *N. confusalis fumosensis* is a very dark, brownish, and uncontrasting form with poorly distinguished pattern, and resembles dark forms of *Nola cicatricalis* (Treitschke, 1835).

#### Material examined:

Holotype, ♀ (plate 1, fig. 3; plate 2, fig. 14), forewing length 20 mm from locality as labelled: "Bulgaria, Eastern Rhodopi Mts, ~ 2 km from the bridge on Arda River, between Madzharovo and Borislavtzi, 160m, N 41°39'15"; E 025°52'16"; MG01, 02.V.2003, S. Beshkov, V. Gashtarov & B. Petrov leg." printed on white paper, another label "Gen. prep. No. 6./07.III.2005, S. Beshkov." and a third label printed on red paper "Holotype, female *Nola ronkayorum* Beshkov". Genital slide No. 6./07.III.2005, S. Beshkov (plate 5, figs. 1–2) with labels with the same text. Deposited in coll. of National Museum of Natural History, Sofia (NMNHS).

Paratypes: 19♂ and 9♀ labelled as follows: Bulgaria: Eastern Rhodopi Mts, Arda valley, Studen Kladenetz Village, 250m, 23.IV.1990, 2♂ in coll. SB: NMNHS; Eastern Rhodopi Mts, Odrintzi Village, 150 m, 30.IV.1997, 6♂ resting at lamp, 4♂ (gen. preps with abdominal segments 1. and 3./07.III.2005, S. Beshkov) in coll. SB: NMNHS, 1 in coll. B. Goater (Hants, UK), 1 in coll. C. W. Plant (Hertfordshire, England) and 1 in coll. K. Soichiro (Osaka, Japan); Eastern Rhodopi Mts, Byala Reka River valley, the bridge near Meden Bouk Village, 200 m, 29–30.IV.1997, 2♂, S. Beshkov leg., 1♂ (gen. prep. with abdominal segments 2./07.III.2005, S. Beshkov), in coll. SB: NMNHS; Eastern Rhodopi Mts, Arda Valley, above the bridge on Arda River near Madzharovo, (Vulture feeding place), 220 m, N 41°38'44"; E 025°52'26", UTM: MG01, 01.V.2003, S. Beshkov & V. Gashtarov leg., 5♂ (gen. preps. 7–11./27.I.2004, S. Beshkov) and 2♀ (gen. prep. 12–13./27.I.2004, S. Beshkov), in coll. SB: NMNHS; Ibid., 02.V.2003, 1♂ (gen. prep. with abdominal segments 3./02.III.2005, S. Beshkov) and 1♀ (gen. prep. 14./27.I.2004, S. Beshkov), in coll. SB: NMNHS; Ibid., 03.V.2003, 1♀ in coll. SB: NMNHS, 1♂ in coll. C. W. Plant (Hertfordshire, England); Eastern Rhodopi Mts, ~ 2 km from the bridge on Arda River, between Madzharovo and Borislavtzi, 160 m, N 41°39'15" E 025°52'16"; MG01, 02.V.2003, S. Beshkov, V. Gashtarov & B. Petrov leg. 1♂ and 3♀ (gen. preps. 15–16./27.I.2004, S. Beshkov; gen. prep. with abdominal segments 5./07.III.2005, S. Beshkov), 3♀ in coll. SB: NMNHS, 1♂ in coll. B. Goater (Hants, UK); Eastern Rhodopi Mts, Kaklitza Village, Kroumovgrad district, 447 m, N 41°24'21" E 025°38'47", 03.V.2005, S. Beshkov & D. Vassilev leg., 1♀ in coll. C. W. Plant (Hertfordshire, England); Southern Black Sea Coast, Ropotamo Park, "Velyov Vir" reserve, Primorsko district, N 42°18'00" E 027°42'43", 27–30.IV.2003, S. Beshkov, B.

Petrov & V. Gashtarov leg. 1♂, in coll. SB: NMNHS; Turkey: Karadeniz Dağları, Coruh Valley, ~20 km Eastern of İspir on the road to Yusufeli, 1060 m, 22.IV.2001, S. Beshkov & J. Gelbrecht leg., 1♀ (gen. prep. with abdominal segments 7./07.III.2005, S. Beshkov), in coll. SB: NMNHS; Prov. Antalya, Taurus Mts., ~3 km to Cevizli from Akseki, 1200 m, 12.V.1999, S. Beshkov & J. Gelbrecht leg., 1♂ (gen. prep. with abdominal segments 8./07.III.2005, S. Beshkov) in coll. SB: NMNHS.

10♂ and 8♀ genitalia fixed on slides have been prepared and examined. All genital slides are labelled with a red label "*Paratype Nola ronkayorum* Beshkov" and are in coll. SB: NMNHS.

Additional material [not examined]: 4 paratypes (2♂, 2♀) from NE Turkey, Prov. Erzurum, Karadeniz Dağları: Korga Dağı, above İspir, near Köprüköy Village, 1600 m, 08.VI.2000, 2♂; Ibid, 03–04.VI.2000, 1♀; near Köprüköy Village, 13 km on the road to Yusufeli, 1100 m, 31.V.2000, 1♀ all Gelbrecht, Drechsel, Busse & Schwabe leg., in coll. J. Gelbrecht (König Wüsterhausen, Germany). According to Dr. Gelbrecht "all specimens look absolutely like your photograph [S. Beshkov's] and differ typically from German *N. confusalis*" (J. Gelbrecht pers. comm. 26.IV.2005).

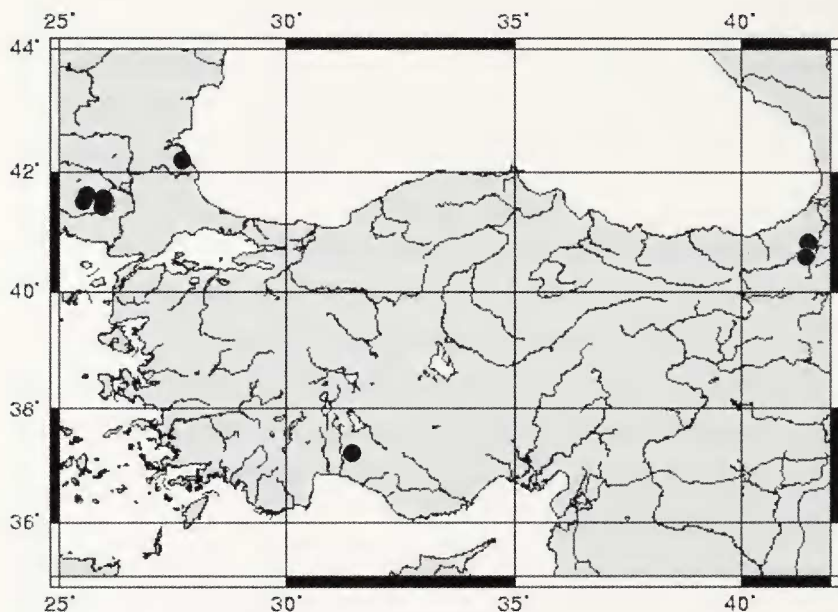


Fig. 50. Localities of *Nola ronkayorum* sp. n.

Distribution: (fig. 50). Up to now the new species is known only from the type material: several localities in the Eastern Rhodopes, Bulgaria, where it seems to be not rare. Another locality in Europe is Southern Black Sea Coast, "Ropotamo Forest Farm" near Primorsko. Outside Europe *Nola ronkayorum* sp. n. is known from Turkey, from where it is known with single specimens only from Anatolia, Taurus Mts. and from the Eastern part of Karadeniz Mts. (Pontic Mts.). *N. ronkayorum* has a disjunctive Ponticomediterranean range. This type of disjunct distribution suggests that the moth is a preglacial relict species, which survived during the ice-age in deep, well protected river-valleys with specific climate and other warm areas. In such refugia, *N. ronkayorum* occurs together with other tertiary-relicts. In two localities, one in Bulgaria and another in Asia *Phegea* 34 (1) (1.III.2006): 28



Minor, *N. ronkayorum* is syntopic to *Valerietta* spp.; in the Taurus Mountains they are also synchronic. *Brahmaea ledereri* Rogenhofer, 1873 was collected very close to the locality in Taurus Mts. at nearly the same time. In the Eastern Rhodopes of Bulgaria *N. ronkayorum* is syntopic to *Conistra ragusae macedonica* (Pinker, 1956).

*Nola confusalis* is known from all over Europe (including Southern Scandinavia and S. Finland), Ukraine, Russia to Amur, Primorye, Korea, Sakhalin, S. Kuril Islands, and China. In Japan, specimens hitherto recorded as *Nola confusalis* in fact represent another species from this group (G. Ronkay, pers. comm.).

Food plants of *Nola confusalis* are *Quercus*, *Fagus*, *Alnus*, *P. spinosa* (Skou 1991: 67), *Tilia* (Porter 1997: 88), *Carpinus*, *Prunus*, *Vaccinium*, *Crataegus* (Rákósy 1996: 67), *Mentha* (de Freina & Witt 1987). According to Porter (1997: 88) the larva does not feed with lichens, as it is often stated.

Habitats: The new species has been collected only at light near warm mixed *Quercus* forests, both dry and humid. The locality in Ropotamo Park is at sea level, in tall forest (*Quercus-Fraxinus-Carpinus* mixed forest with several kinds of lianas) with swamps and near a river close to the sea. In the Eastern Rhodopes most localities are in warm, dry, mixed oak forest in an arid stony area at an altitude less than 250 m (fig. 51) and single specimens have been collected at an altitude of 450 m. The forest and its edge are composed mostly by *Quercus pubescens* Willd., *Q. frainetto* Ten., *Q. polycarpa* Schur., *Carpinus orientalis* Mill., *Acer monspessulanum* L., *Ulmus minor* Mill., *Alnus glutinosa* L., *Pyrus amygdaliformis* Vill., *Pistacia terebinthus* L., *Prunus spinosa* L., and *Paliurus spina-christi* Mill. In Turkey, habitats also are mixed oak forest in deep river valleys in high mountains, but in much higher altitudes – up to 1600 m. In spite of the altitude, the vegetation and the species composition are similar to these in the Eastern Rhodopes.

Flight period: *Nola ronkayorum* sp. n. is a univoltine species which flies during a short period in early spring from late April (22.IV) to the first ten days of June (08.VI.2000 at an altitude of 1600 m), depending on the year and the altitude of the locality. In Bulgaria, from where there is more material available, the flight period of the males starts on 23.IV and continues to the beginning of May (03.V), whilst females are recorded only in the beginning of May (01–03.V). In the very end of April-beginning of May 2005 an attempt was made to collect more paratypes in the district of Madzharovo, where at that time *Nola ronkayorum* is not rare. Not a single specimen was found, probably due to the advanced spring that year there. A single female specimen was collected however that time (03.V.2005) in the district of Kroumovgrad Town (Kaklitzia Village) at higher altitude (450 m).



Fig. 51. Habitat of *Nola ronkayorum* sp. n., Bulgaria, Eastern Rhodopi Mts., above the bridge on the Arda River near Madzharovo.

In the literature is stated, that *Nola confusalis* flies from March to early summer. In Hertfordshire country, South-East England, records of adults are typically from the end of the first week of May until the end of the first week of June ( $n = 53$ ), with occasional examples a few days earlier or later since 2002. However, there has been a shift in flight period, with adult males appearing at light traps from 11.IV onwards and both sexes persisting until mid June ( $n = 11$ ) (C. W. Plant, pers. comm. 06.V.2005). According to Rebel & Zerny (1931: 118) there is a large damaged male specimen, collected at the end of July (23–31.VII.[1918]) in the Korab Mts, Albania. This report, according to Daniel (1964: 22) seems to be doubtful as a result of wrongly determined material or a wrongly given locality, because of the late flight period and the high altitude of the biotope. The flight period in N Europe according to Skou (1991: 66–67) is from the beginning of May till middle June. In France according to Leraut (1992: 174) *N. confusalis* has two generations. In Bulgaria there are reports from April to the second half of July (05.VIII.1911 that time which at present calendar is 23.VII.) (Buresch & Tuleschcow 1943: 86). According to de Freina & Witt (1987) the flight period is from April to August, depending on the climate.

Sympatric and synchronic species: In Bulgaria, E Rhodopi Mts, from where there is more material available *Nola ronkayorum* sp. n. is sympatric and synchronic with the following uncommon species, some of which are abundant: *Cilix asiatica* O. Bang-Haas, 1907, *Charissa intermedia* (Wehrli, 1917), *Protorhoe corollaria* (Herrich-Schäffer, 1852), *Eupithecia insigniata* (Hübner, [1790]), *Chesias rufata* (Fabricius, 1775), *Oulobophora externata* (Herrich-Schäffer, 1848), *Paradrymonia vittata bulgarica* de Freina, [1983], *Peridea korbi* (Rebel, 1918), *Zethes insularis* Rambur, 1833, *Shargacucullia blattariae* (Esper, [1790]), *Calocucullia celsiae* (Herrich-Schäffer, 1850), *Lithophane merckii* (Rambur, 1832), *Dioszeghyana schmidtii pinkeri* Hreblay & Varga, 1993, *Perigrapha rorida* (Frivaldsky, 1835), *Egira anatolica* (Hering, 1933), *Nola cicatricalis* (Treitschke, 1835), *Nola subchlamydula* (Staudinger, 1871).

On the Black Sea Coast *N. ronkayorum* has been collected only once, together with *Phyllodesma tremulifolia* (Hübner, [1810]), *Ligdia adustata* ([Denis & Schiffermüller], 1775), *Lycia hirtaria* (Clerck, 1759), *Anticlea derivata* ([Denis & Schiffermüller], 1775), *Peridea anceps* (Goeze, 1781), *Calophasia lunula* (Hufnagel, 1766), *Nola cicatricalis* (Treitschke, 1835) and not many other species because of the bad weather conditions at that time. This is the only locality where the present author has found *N. ronkayorum* together with *N. confusalis*.

Only a single specimen of *Nola ronkayorum* has been collected in the Taurus Mts., together with *Zerynthia deyrollei* (Oberthür, 1869), *Anthocharis gruneri* Herrich-Schäffer, [1851], *Saturnia pyri* ([Denis & Schiffermüller], 1775), *Simyra dentinosa* Freyer, 1839, *Behounekia freyeri* (Frivaldsky, 1835), *Cleonymia opposita* (Lederer, 1870), *Valerietta niphopasta niphopasta* (Hampson, 1906), *Hadula mendax mendax* (Staudinger, 1879), and *Hadula mendica* (Staudinger, 1895).

In Karadeniz Dağları (Pontic Mountains), *N. ronkayorum* has been collected together with *Saturnia spini* ([Denis & Schiffermüller], 1775), *Eupithecia adscriptaria* (Staudinger, 1871), *Aplocera musculata* Staudinger, 1892, *Metopomrhis albirena* (Christoph, 1887), *Cleonymia opposita* (Lederer, 1870), and *Hadula dianthi dianthi* (Tauscher, 1809).

Etymology: The new species is named in honour of the eminent Hungarian lepidopterologist brothers, Laszlo and Gábor Ronkay (Budapest), who confirmed the identity of the material described here as a new species.

### Acknowledgments

I would like to thank Dr. Laszlo Ronkay and Gábor Ronkay for confirming the new species, Dr. Jörg Gelbrecht (König Wüsterhausen, Germany) for his

comments and data used here, and Michael Fibiger (Sorø, Denmark) for specimens of *N. confusalis* from Western Europe for comparison. Finally, I am grateful to Colin Plant (Hertfordshire, England) for linguistic assistance and for correction of a draft of this paper.

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